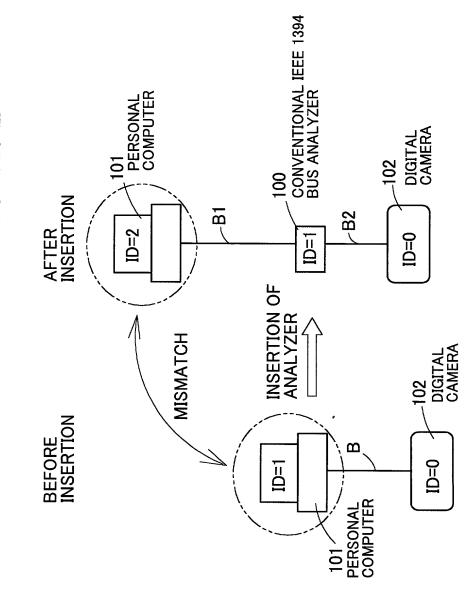
CONSTRUCTION OF IEEE 1394 BUS TO WHICH CONVENTIONAL BUS ANALYZER IS CONNECTED



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FIG. 2

CONSTRUCTION IN WHICH CONVENTIONAL BUS

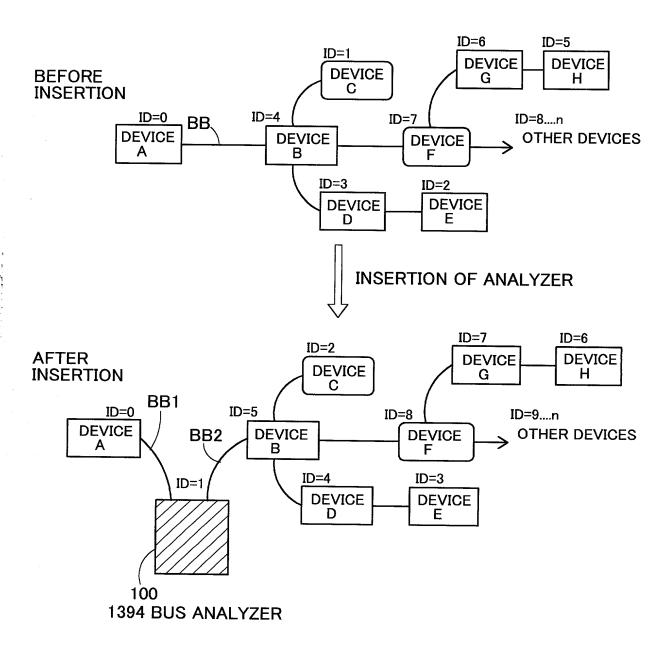
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CONSTRUCTION IN WHICH CONVENTIONAL BUS ANALYZER IS CONNECTED TO IEEE 1394 BUS TO WHICH A NUMBER OF DEVICES ARE CONNECTED



CONSTRUCTION IN WHICH BUS ANALYZER OF FIRST EMBODIMENT IS CONNECTED TO IEEE 1394 BUS FIG. 3

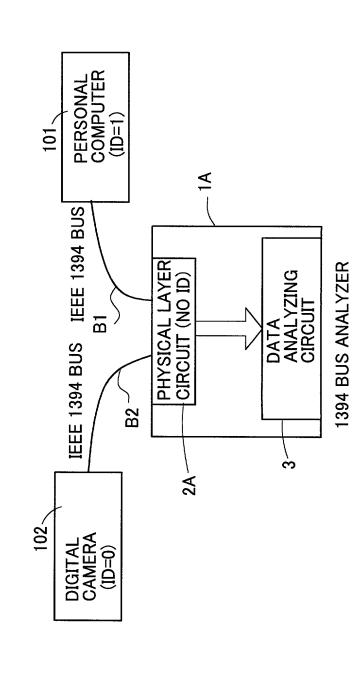


FIG 4

STATE TRANSITION DIAGRAM SHOWING TREE—IDENTIFYING OPERATION IN FIRST EMBODIMENT

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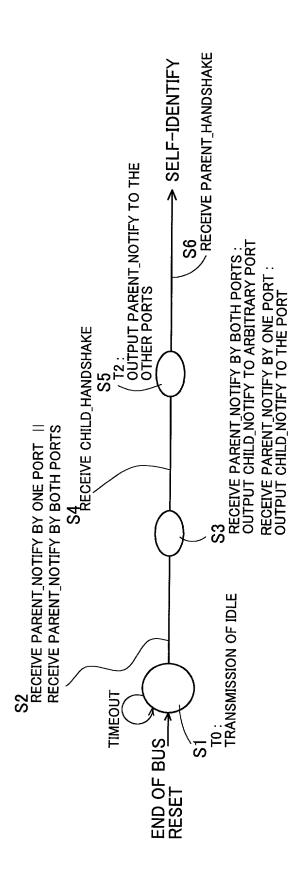


FIG. 5

STATE TRANSITION DIAGRAM SHOWING SELF-IDENTIFYING OPERATION IN FIRST EMBODIMENT

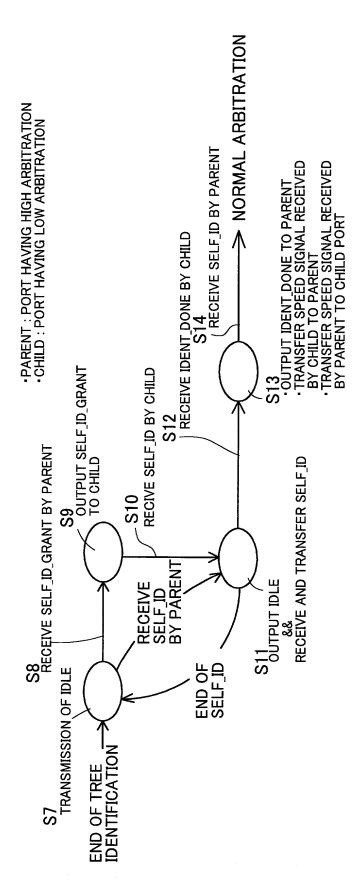


FIG. 6 TREE-IDENTIFYIN

TREE-IDENTIFYING OPERATION IN FIRST EMBODIMENT (RECEIVE PARENT_NOTIFY BY ONE OF PORTS)

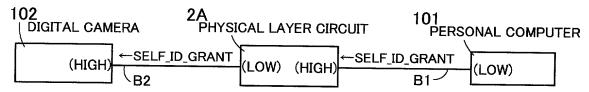
(P1) RECEIVE PARENT		DIGITAL CAME	
102 DIGITAL CAMERA		LAYER CIRCUIT	101 PERSONAL COMPUTER
PA	RENT_NOTIFY→ (B2	B1	
(P2) OUTPUT CHILD_N	OTIFY TO DIGIT	AL CAMERA	
102 DIGITAL CAMERA (HIGH) PAF B2	2A PHYSICAI RENT_NOTIFY→ ←CHILD_NOTIFY	L LAYER CIRCUIT	101 PERSONAL COMPUTER
(P3) RECEVE CHILD_HA OF PARENT_NOT 102	IFY FROM DIGIT 2A	AL CAMERA	101
DIGITAL CAMERA (HIGH)	4	(LOW) B1	PERSONAL COMPUTER
(P4) OUTPUT PARENT ROOT_CONTENTION PARENT_NOTIFY	NOTIFY TO THE ON WHEN PERS AT THIS TIME	E OTHER PORT SONAL COMPU	
102 DIGITAL CAMERA (HIGH)	\ _	LAYER CIRCUIT PARENT_N ←PARENT	T_NOTIFY
(P5) STOP OUTPUTTIN BUT CONTINUOU LAYER CIRCUIT	IG PARENT_NOT SLY OUTPUT PA	TIFY FROM PEF ARENT_NOTIFY	FROM PHYSICAL
102 DIGITAL CAMERA B2 (HIGH) ←CI	\ \\	LAYER CIRCUIT LOW) PARENT NO	101 PERSONAL COMPUTER OTIFY→ B1
(P6) RECEIVE PARENT OUTPUTS CHILD.	NOTIFY AFTER	HEN PERSONA RANDOM TIME	
102 DIGITAL CAMERA		LAYER CIRCUIT	101 PERSONAL COMPUTER
(HIGH) ←CH	ILD_NOTIFY (LOW)	(HI(iH)	NOTIFY /
(P12) STOP OUTPUTTI FINISHING TREE 102	NG SIGNALS FR -IDENTIFYING C 2A	ROM BOTH POP PERATION	RTS, THEREBY 101
DIGITAL CAMERA	PHYSICAL		PERSONAL COMPUTER B1
(HIGH)	B2 (LOW)	(HIGH)	(LOW)

TREE-IDENTIFYING OPERATION IN FIRST EMBODIMENT (RECEIVE PARENT_NOTIFY BY BOTH PORTS)

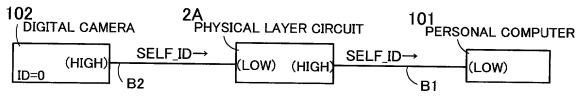
(P7) RECEIVE PARENT_NOTIFY FROM BOTH DEVICES
102 DIGITAL CAMERA PHYSICAL LAYER CIRCUIT PERSONAL COMPUTER PARENT_NOTIFY B2
(P8) OUTPUT CHILD_NOTIFY TO DIGITAL CAMERA
102 PHYSICAL LAYER CIRCUIT DIGITAL CAMERA PHYSICAL LAYER CIRCUIT PERSONAL COMPUTER (HIGH) CHILD_NOTIFY CHILD_NOTIFY CHILD_NOTIFY PARENT_NOTIFY
(P9) STOP OUTPUTTING PARENT_NOTIFY FROM DIGITAL CAMERA TO THEREBY RECEIVE CHILD_HANDSHAKE, AND OUTPUT PARENT_NOTIFY TO PERSONAL COMPUTER. RECEIVE ROOT_CONTENTION WHEN PERSONAL COMPUTER ALSO OUTPUTS PARENT_NOTIFY AT THIS TIME.
102 DIGITAL CAMERA PHYSICAL LAYER CIRCUIT PERSONAL COMPUTER PARENT_NOTIFY CHILD_NOTIFY (LOW) PARENT_NOTIFY B1
(P10) STOP OUTPUTTING PARENT_NOTIFY FROM PERSONAL COMPUTER BUT CONTINUOUSLY OUTPUT PARENT_NOTIFY FROM PHYSICAL LAYER CIRCUIT
102 DIGITAL CAMERA PHYSICAL LAYER CIRCUIT PERSONAL COMPUTER (HIGH) CHILD_NOTIFY (LOW) PARENT_NOTIFY B1
(P11) OUTPUT CHILD_NOTIFY FROM PERSONAL COMPUTER AFTER RANDOM TIME, THEREBY RECEIVING PARENT_HANDSHAKE
102 DIGITAL CAMERA PHYSICAL LAYER CIRCUIT PERSONAL COMPUTER (HIGH) CHILD_NOTIFY B2 PARENT_NOTIFY CHILD_NOTIFY B1
(P12) FINISH TREE-IDENTIFYING OPERATION
102 DIGITAL CAMERA PHYSICAL LAYER CIRCUIT (HIGH) (LOW) (HIGH) (LOW) (LOW)

SELF-IDENTIFYING OPERATION IN FIRST EMBODIMENT

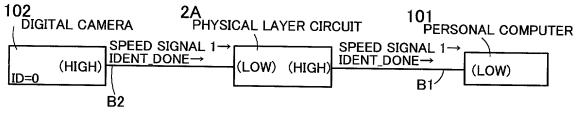
(P13) RECEIVE SELF_ID_GRANT FROM PERSONAL COMPUTER AND TRANSFER IT TO DIGITAL CAMERA



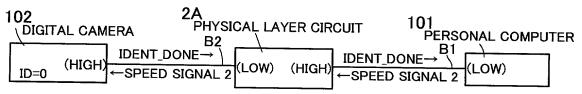
(P14) RECEIVE SELF_ID PACKET FROM DIGITAL CAMERA AND TRANSFER IT TO PERSONAL COMPUTER



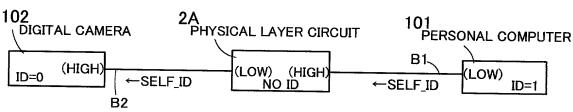
(P15) RECEIVE IDENT_DONE PACKET AND SPEED SIGNAL FROM DIGITAL CAMERA AND TRANSFER THEM TO PERSONAL COMPUTER



(P16) RECEIVE SPEED SIGNAL FROM PERSONAL COMPUTER AND TRANSFER IT TO DIGITAL CAMERA



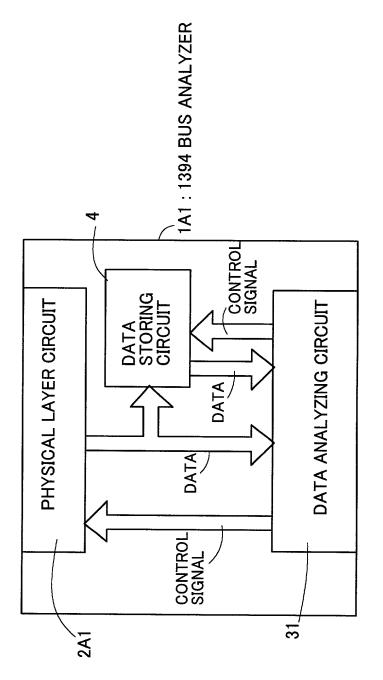
(P17) RECEIVE SELF_ID PACKET FROM PERSONAL COMPUTER AND FINISH SELF_IDENTIFYING OPERATION



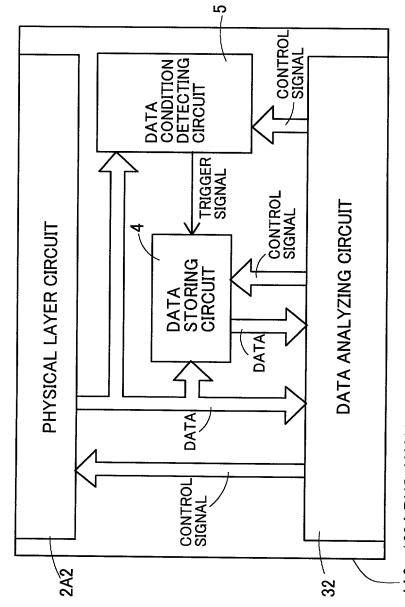
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FIG. 9

FIRST MODIFICATION OF BUS ANALYZER IN FIRST EMBODIMENT

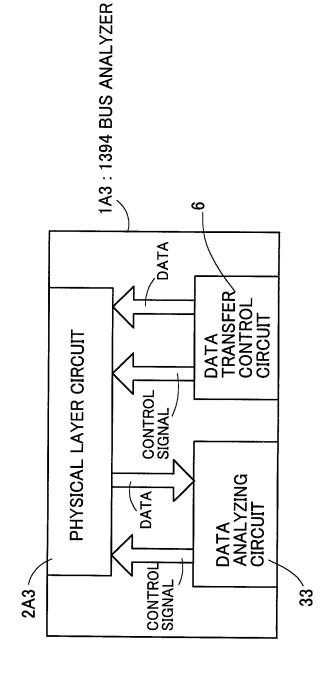


SECOND MODIFICATION OF BUS ANALYZER IN FIRST EMBODIMENT



1A2:1394 BUS ANALYZER

THIRD MODIFICATION OF BUS ANALYZER IN FIRST EMBODIMENT



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FIG. 12

FOURTH MODIFICATION OF BUS ANALYZER IN FIRST EMBODIMENT

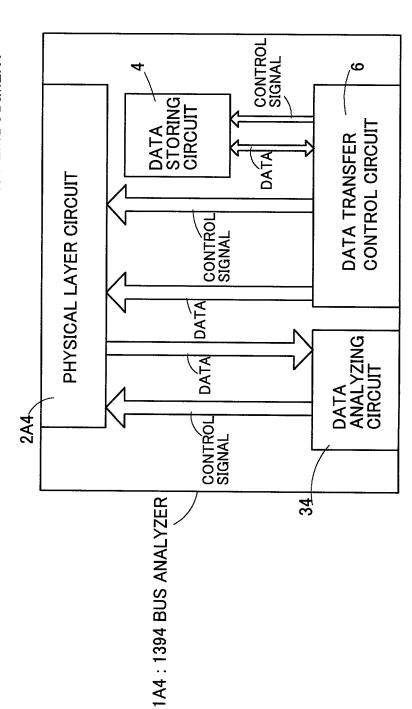
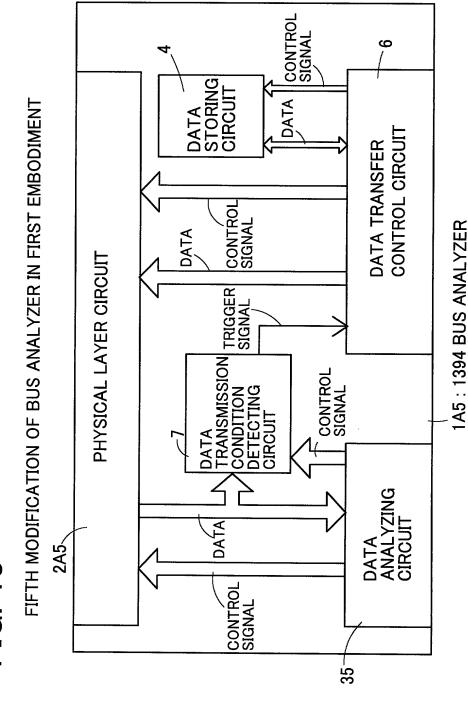


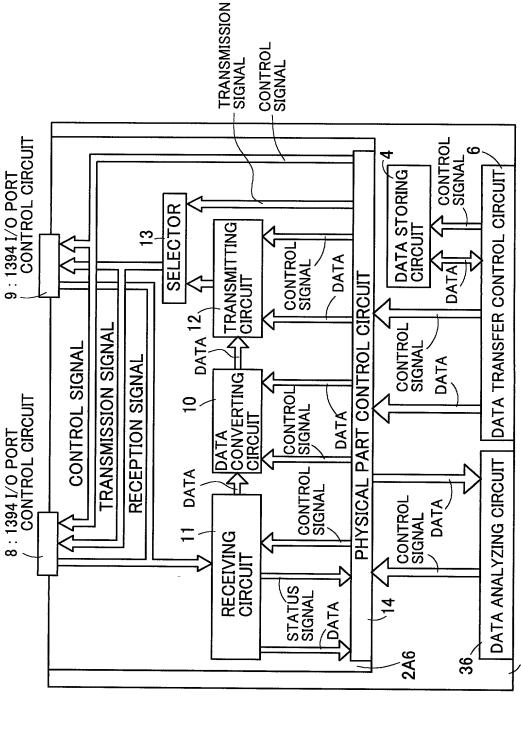
FIG. 13



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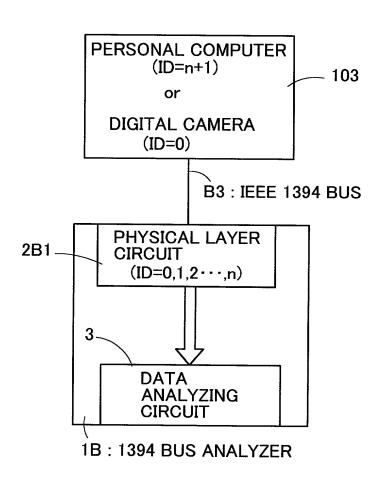
1A6: 1394 BUS ANALYZER

Total Company

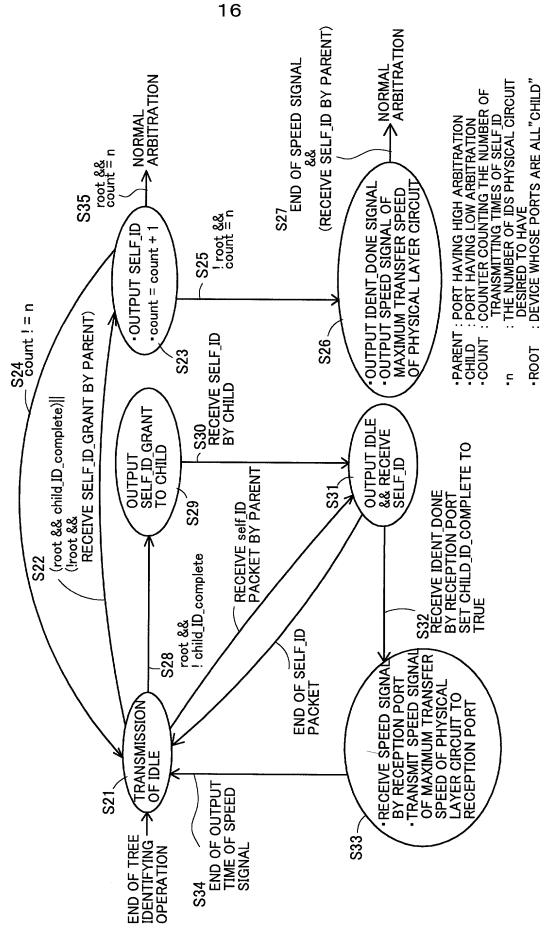
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FIRST CONSTRUCTION EXAMPLE OF IEEE 1394 BUS TO WHICH BUS ANALYZER OF SECOND EMBODIMENT IS CONNECTED







SELF-IDENTIFYING OPERATION IN FIRST CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE HAS HIGH ARBITRATION)

(P21) RECEIVE SELF_ID_GRANT FROM PI	ERSONAL C	OMPUTER	
103	2B		
PERSONAL COMPUTER		HYSICAL LAYER	CIRCUIT
(LOW) SELF_ID_GRANT→		(HIGH)	
(P22) OUTPUT SELF_ID PACKET OF ID =	0 TO DEDC		
103	2B) I EK
PERSONAL COMPUTER		HYSICAL LAYER	CIRCUIT
(LOW) ←SELF_ID	PACKET 0	(HIGH)	ID=0
(P23) RECEIVE SELF_ID_GRANT FROM PE	ERSONAL C	OMPUTER	
103	2B1		
DEDCOMAL COMPLITED		HYSICAL LAYER	CIRCUIT
(LOW) SELI_ID_GRANT >		(HIGH)	ID=0
(P24) OUTPUT SELF_ID PACKET OF ID =	1 TO PERS	ONAL COMPL	
103 , PERSONAL COMPUTER	2B1		
	B3 Pi	HYSICAL LAYER	CIRCUIT
(LOW) ←SELF_ID P	ACKET 1	(HIGH)	ID=0.1
•			
(P25) OUTPUT SELF_ID PACKET OF ID =	n TO PERSO	ONAL COMPL	ITED
103	2B1	JIVAL GOIVIPU	HER
(PERSONAL COMPUTER	33 P	YSICAL LAYER	CIRCUIT
(LOW) ←SELF_ID P	ACKET n	(HIGH) ID=(),1···,n
(D26) OUTDUT IDENT DONE AND ODDE			
(P26) OUTPUT IDENT_DONE AND SPEED SPEED OF PHYSICAL LAYER CIRC	SIGNAL OF	MAXIMUM TF	RANSFER
RECEIVE SPEED SIGNAL 1 FROM F	PERSONAL (COMPLITER	POTER AND
103	2B1	0,EI	
PERSONAL COMPUTER SPEED SIGNAL 1→	33 PH	YSICAL LAYER	CIRCUIT
(LOW) ←IDENT DON	JE	HIGH)	0,1···.n
← SPEED SIG	GNAL(.MAX)		7,7,7,7
(P27) RECEIVE SELF_ID PACKET OF ID = (N+1) FROM	PERSONAL	
COMPUTER AND FINISH SELF-IDEN	NTIFYING O	PERATION	
103 (PERSONAL COMPUTER =	2B1	IYSICAL LAYER (CIRCUIT
SELF_ID PACKET n+1	γ ₂ γ		
ID=n+1 (LOW)	' ((HIGH)	2

ID=1,2···,n

SELF-IDENTIFYING OPERATION IN FIRST CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE ARBITRATION OF DEVICE CONNECTED ON THE OTHER SIDE IS LOW)

(P28) OUTPUT SELF_ID_GRANT TO DIGITAL CAMERA

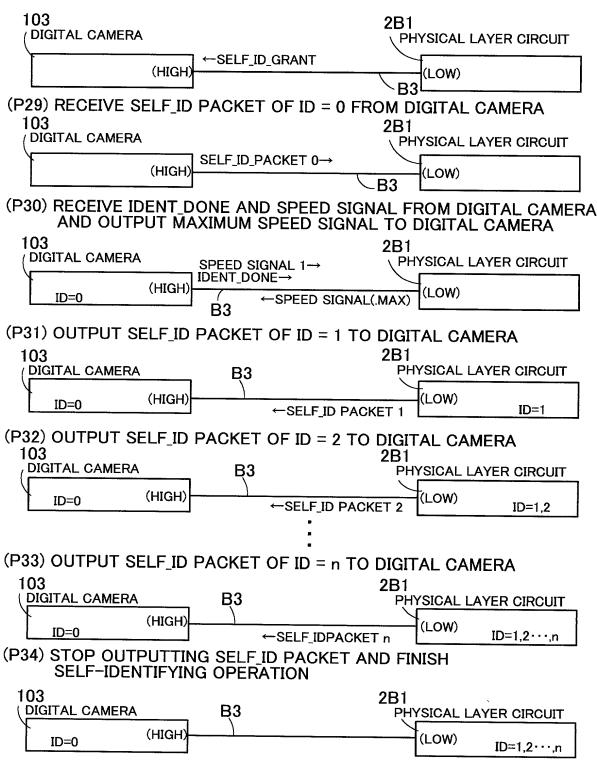
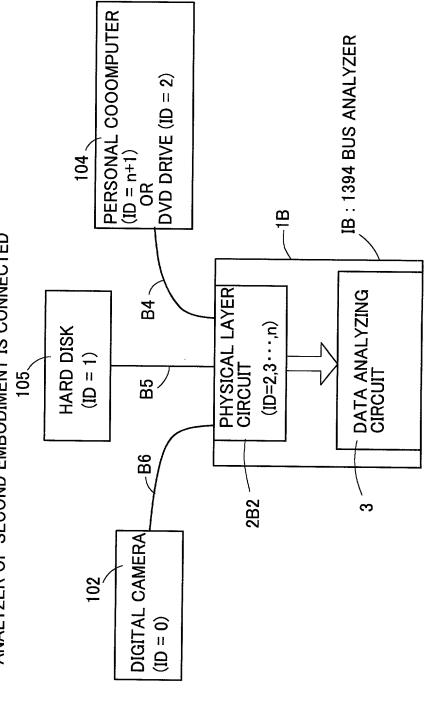


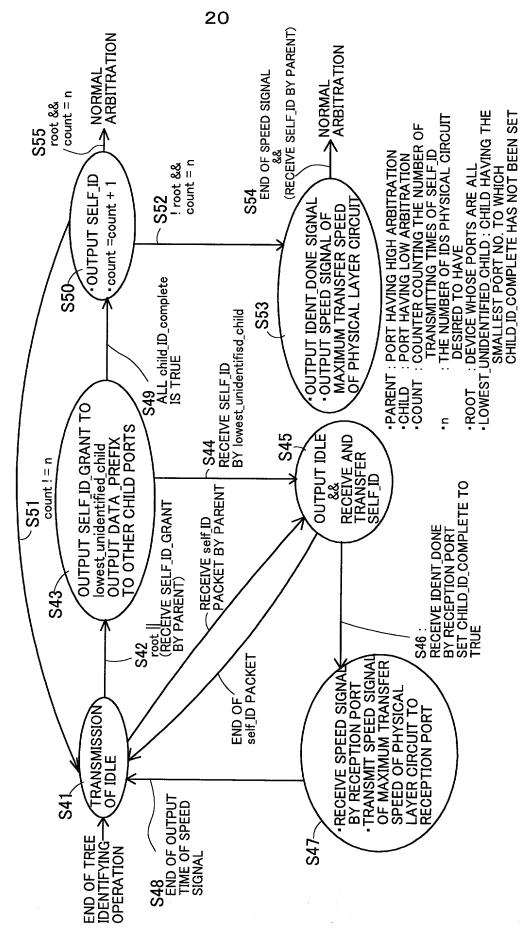
FIG. 19

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STATE TRANSITION DIAGRAM SHOWING SELF-IDENTIFYING OPERATION IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT FIG. 20

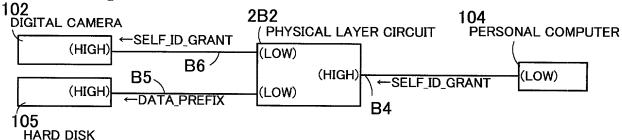


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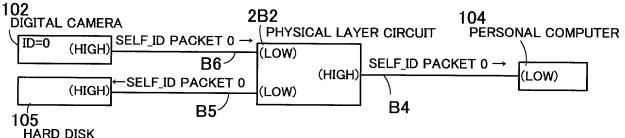
FIG. 21

SELF-IDENTIFYING OPERATION (1) IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE HAS DEVICE HAVING HIGH ARBITRATION)

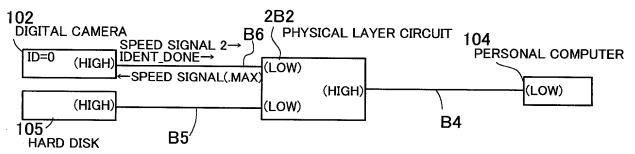
(P41) RECEIVE SELF_ID_GRANT FROM PERSONAL COMPUTER, OUTPUT SELF_ID_GRANT TO DIGITAL CAMERA AND OUTPUT DATA_PREFIX TO HARD DISK



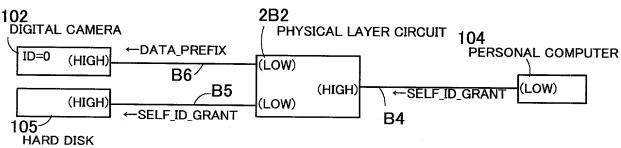
(P42) RECEIVE SELF_ID PACKET OF ID = 0 FROM DIGITAL CAMERA AND OUTPUT IT TO PERSONAL COMPUTER AND HARD DISK



(P43) RECEIVE IDENT_DONE AND SPEED SIGNAL FROM DIGITAL CAMERA AND OUTPUT SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO DIGITAL CAMERA

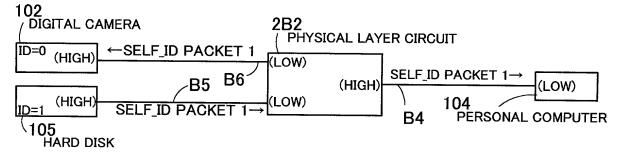


(P44) RECEIVE SELF_ID_GRANT FROM PERSONAL COMPUTER, OUTPUT SELF_ID_GRANT TO HARD DISK AND OUTPUT DATA_PREFIX TO DIGITAL CAMERA

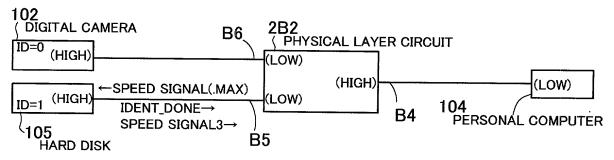


SELF-IDENTIFYING OPERATION (2) IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE HAS DEVICE HAVING HIGH ARBITRATION)

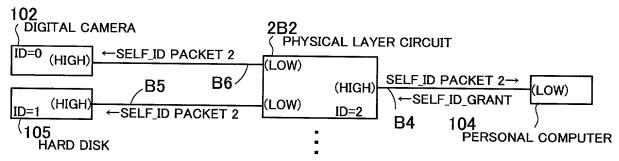
(P45) RECEIVE SELF_ID PACKET OF ID = 1 FROM HARD DISK AND TRANSFER IT TO PERSONAL COMPUTER AND DIGITAL CAMERA



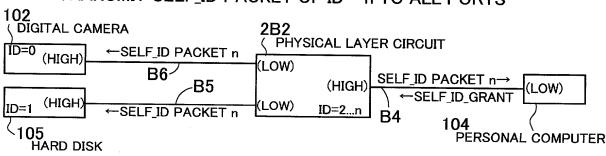
(P46) RECEIVE IDENT_DONE AND SPEED SIGNAL FROM HARD DISK AND OUTPUT SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO HARD DISK



(P47) RECEIVE SELF_ID_GRANT FROM PERSONAL COMPUTER AND TRANSMIT SELF_ID PACKET OF ID = 2 TO ALL PORTS



(P48) RECEIVE SELF_ID_GRANT FROM PERSONAL COMPUTER AND TRANSMIT SELF_ID PACKET OF ID = n TO ALL PORTS



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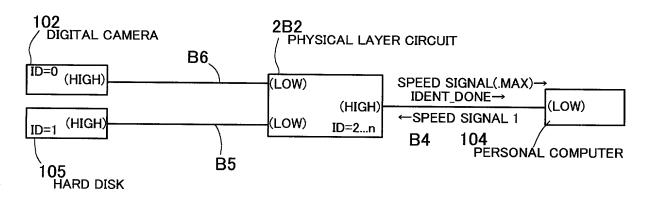
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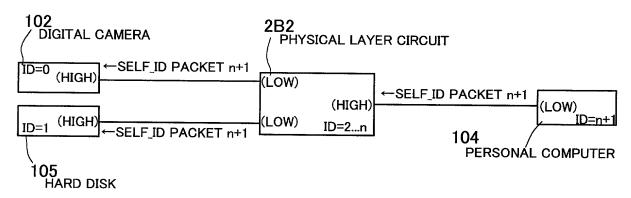
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SELF-IDENTIFYING OPERATION (3) IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE HAS DEVICE HAVING HIGH ARBITRATION)

(P49) OUTPUT IDENT_DONE AND SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO PERSONAL COMPUTER AFTER TRANSMITTING PACKET AND RECEIVE SPEED SIGNAL FROM PERSONAL COMPUTER

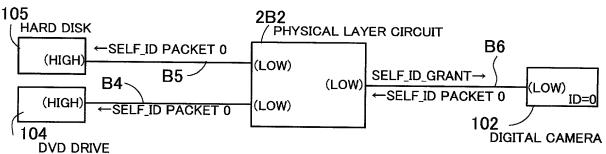


(P50) RECEIVE SELF_ID PACKET OF ID = (n+1) FROM PERSONAL COMPUTER, FINISH SELF-IDENTIFYING OPERATION AND TRANSFER PACKET TO DIGITAL CAMERA AND HARD DISK

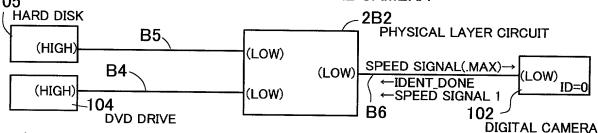


SELF-IDENTIFYING OPERATION (1) IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE DOES NOT HAVE DEVICE HAVING HIGH ARBITRATION)

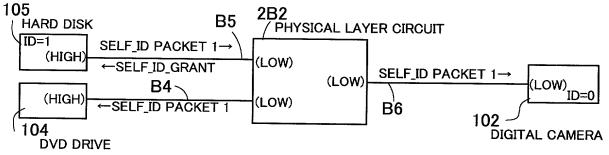
(P51) OUTPUT SELF_ID_GRANT TO DIGITAL CAMERA, RECEIVE SELF_ID PACKET FROM DIGITAL CAMERA, AND TRANSFER IT TO HARD DISK AND DVD DRIVE



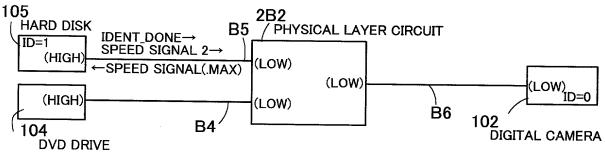
(P52) RECEIVE IDENT_DONE AND SPEED SIGNAL FROM DIGITAL CAMERA AND OUTPUT SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO DIGITAL CAMERA



(P53) OUTPUT SELF_ID_GRANT TO HARD DISK, RECEIVE SELF_ID PACKET
OF ID = 1 FROM HARD DISK, AND TRANSFER IT TO DIGITAL CAMERA
AND DVD DRIVE



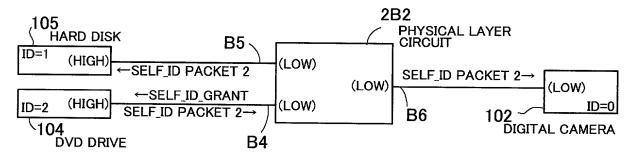
(P54) RECEIVE IDENT_DONE AND SPEED SIGNAL FROM HARD DISK AND OUTPUT SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO HARD DISK



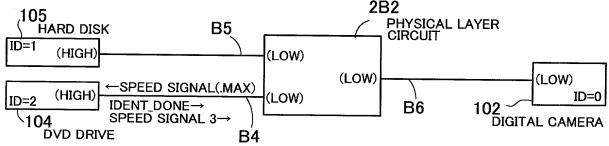
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SELF-IDENTIFYING OPERATION (2) IN SECOND CONSTRUCTION EXAMPLE OF SECOND EMBODIMENT (IN THE CASE WHERE DEVICE CONNECTED ON THE OTHER SIDE DOES NOT HAVE DEVICE HAVING HIGH ARBITRATION)

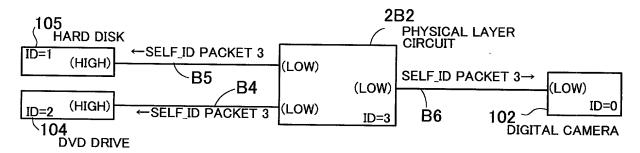
(P55) OUTPUT SELF_ID GRANT TO DVD, RECEIVE SELF_ID PACKET FROM DVD DRIVE, AND TRANSFER IT TO DIGITAL CAMERA AND HARD DISK



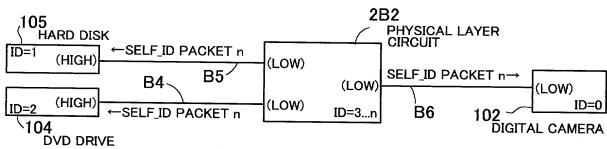
(P56) RECEIVE IDENT_DONE AND SPEED SIGNAL FROM DVD DRIVE AND OUTPUT SPEED SIGNAL OF MAXIMUM TRANSFER SPEED OF PHYSICAL LAYER CIRCUIT TO DVD DRIVE



(P57) OUTPUT SELF_ID PACKET OF ID = 3



(P58) OUTPUT SELF_ID PACKET OF ID = n AND FINISH SELF-IDENTIFYING OPERATION



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